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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/366,849	08/04/1999	PETER A. BARANY	NORT-0004-US	3574

7590 04/07/2004

DAN C HU
TROP PRUNER HU & MILES P C
8554 KATY FREEWAY
STE 100
HOUSTON, TX 77024

EXAMINER

TRAN, THIEN D

ART UNIT	PAPER NUMBER
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2665

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/366,849

Applicant(s)

BARANY ET AL.

Examiner

Thien D Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 11-16 are rejected under 35 U.S.C. 102(e) as being unpatentable over Dent (U.S Patent No. 6,011,786).

Regarding claim 11, Dent discloses a method for use in a mobile communications system, comprising:

carrying control signaling in a multiframe that includes a plurality of frames, each frame including a plurality of time slots, figure 8a;

communicating control signaling in predetermined time slots of predetermined frames, figure 8a; and

communicating in case of lack of speed activity (idle periods) in time slots adjacent the predetermined time slots of the predetermined frames, col.10 lines 49-50.

Regarding claim 12, Dent discloses a method, wherein each frame includes eight time slots, and wherein communicating the control signaling includes communicating the control signaling in odd time slots of the predetermined frames. See figure 8a.

Regarding claim 13, Dent discloses a method, wherein communicating the idle periods includes communicating the idle periods in even time slots of the predetermined frames. See figure 8a.

Regarding claim 14, Dent discloses a method, wherein each frame includes time slots 0, 1, 2, 3, 4, 5, 6, and 7, and wherein communicating the control signaling includes communicating the control signaling in time slots 1, 3, and 5, and communicating the idle periods includes communicating the idle periods in time slots 0, 2, and 4. See figure 8a.

Regarding claim 15, Dent discloses a method, wherein each frame includes time slots 0, 1, 2, 3, 4, 5, 6, and 7, and wherein communicating the control signaling includes communicating the control signaling in time slots 1, 3, 5, and 7, and wherein communicating the idle periods includes communicating the idle periods in time slots 0, 2, 4, and 6. See figure 8a.

Regarding claim 16, Dent discloses a method, further comprising communicating traffic in at least some of the frames other than the predetermined frames. See figure 8a.

3. Claim 24 is rejected under 35 U.S.C. 102(e) as being unpatentable over Kage (U.S Patent No. 5,093,928).

Regarding claim 24, Dent discloses a mobile unit for use in a mobile communications system, comprising:

a transceiver to transmit and receive control and traffic signaling carried in frames each having a plurality of time slots; and

a control unit adapted to receive control signaling carried in time slots adjacent idle time slots defined as guard periods. See col.1 lines 45-55.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-10, 17-23, and 25-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (U.S Patent No. 6,011,786) in the view of Kage (U.S Patent No. 5,093,928).

Regarding claim 1, Dent discloses a method for use in a mobile communications system having a plurality of cell sectors (segments), figure 7, comprising:

communicating control and traffic signaling in a frame having a plurality of time slots in each cell sector (segment), the time slots being time synchronized among the cell segments, col.10 lines 23-29; and

transmitting control signaling in time slots adjacent time slots allocated as traffic time slots, figures 8.

Dent does not disclose that the control signaling slots transmitted in adjacent time slot allocated as guard periods to avoid control signaling in a time slot of a first cell

segment from interference by traffic signaling in another time slot of a neighboring cell segment. However, Kage discloses that a control channel (signaling time slot) is arranged next to idle slots (guard slots) to avoid interference with other data channels (traffic signaling of other cells), col.1 lines 40-60. Therefore, it would have been obvious to one having ordinary skill in the art to implement the feature of the control signaling slots transmitted in the adjacent time slot allocated as the guard periods to avoid the control signaling in a time slot of the first cell segment from interference by traffic signaling in another time slot of a neighboring cell segment to the system of Dent so that the communication system becomes more reliable due to the decreasing of the probability of co-channel interference events.

Regarding claim 2, Dent discloses a method, wherein transmitting the control signaling includes transmitting the control signaling in every other time slot of each frame. See figure 8a.

Regarding claim 3, Dent discloses a method, wherein communicating the control and traffic signaling includes communicating the control signaling in odd time slots of each frame such as F_u in sector l and F_x in sector k. See figure 8a.

Regarding claim 4, Dent discloses a method, wherein each time frame includes time slots 0, 1, 2, 3, 4, 5, 6, and 7, and wherein the transmitting includes transmitting the control signaling in time slots 1, 3, and 5. See figure 8a.

Regarding claim 5, Dent discloses a method, wherein each time frame includes time slots 0, 1, 2, 3, 4, 5, 6, and 7, and wherein the transmitting includes transmitting the control signaling in time slots 1, 3, 5, and 7. See figure 8a.

Regarding claim 6, Dent discloses a method, wherein transmitting the control signaling includes transmitting one of a synchronization burst and a frequency correction burst. See col.10 lines 23-30.

Regarding claims 7, 8, Dent discloses a method for use in a mobile communications system having a plurality of cell segments, comprising:

defining a plurality of channels and a frame having a plurality of time slots, figure 8a;

providing a channel reuse pattern that is based on a plurality of channel frequencies and a plurality of time groups, wherein signaling is transmitted in different time slots of the frame in corresponding time groups, col.9 lines 14-20.

Dent does not disclose providing predetermined time slots as guard periods to reduce likelihood of interference of signaling due to overlap of time slots in neighboring cell segments. However, Kage discloses that a control channel (signaling time slot) is arranged next to idle slots (guard slots) to avoid interference with other data channels (traffic signaling of other cells), col.1 lines 40-60. Therefore, it would have been obvious to one having ordinary skill in the art to implement the feature of the control signaling slots transmitted in the adjacent time slot allocated as the guard periods to avoid the control signaling in a time slot of the first cell segment from interference by traffic signaling in another time slot of a neighboring cell segment to the system of Dent so that the communication system becomes more reliable due to the decreasing of the probability of co-channel interference events.

Regarding claim 9, Dent discloses a method, wherein the defining includes defining a frame having eight time slots. See figure 8a.

Regarding claim 10, Dent discloses a method, further comprising allocating control signaling to be carried in odd time slots of each frame such as F_u in sector l and F_x in sector k. See figure 8a.

Regarding claim 17, Dent discloses a method, Apparatus for use in a mobile communications system having a plurality of cell segments, comprising:

an antenna (interface unit) capable of communicating with the cell segments, col.1 lines 50-60; and

a base station (controller) adapted to control communications of control and traffic signaling in a frame having a plurality of time slots in each cell segment (col.1 lines 55-60, the time slots being synchronized among the cell segments (col.10 lines 23-27).

Dent does not disclose the base station further adapted to define guard periods, each including at least one time slot to protect control signaling communicated in a time slot from interference due to overlap of time slots in neighboring cell segments.

However, Kage discloses that a control channel (signaling time slot) is arranged next to idle slots (guard slots) to avoid interference with other data channels (traffic signaling of other cells), col.1 lines 40-60. Therefore, it would have been obvious to one having ordinary skill in the art to implement the feature of defining guard periods, each including at least one time slot to protect control signaling communicated in a time slot from interference due to overlap of time slots in neighboring cell segments to the system

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of Dent so that the communication system becomes more reliable due to the decreasing of the probability of co-channel interference events.

Regarding claim 18, Dent discloses a method, wherein the controller is capable of communicating packet data between a data network and a radiotelephone (mobile unit) in one of the cell segments, col.1 lines 40-45.

Regarding claim 19, Dent discloses a method, further comprising a second controller capable of communicating PSTN (circuit-switched traffic) between mobile units in the cell segments, col.2 lines 5-8.

Regarding claim 20, Dent discloses a method, wherein the controller is adapted to define a channel reuse pattern based on frequencies and time groups, control signaling being carried in different time slots of the frame in corresponding time groups, col.10 lines 50-60.

Regarding claim 21, Dent discloses a method for use in a mobile communications system having a plurality of cells each divided into three sectors, comprising:

allocating a channel frequency to each cell sector, col.8 lines 5-10;

defining groups of sector cells using different time slots (N time groups), col.10 line 8;

defining a frame having eight time slots, figure 8a;

providing an effective a predetermine of time slot reuse patterns ($N/(3*N)$ channel) reuse pattern that is based on the channel frequencies and the plurality of time

groups, wherein signaling is carried in a different time slot of the frame in each time group, col.9 lines 25-30; and

Dent does not disclose allocating predetermined time slots in the frame as guard periods to reduce likelihood of interference of signaling due to overlap of time slots between neighboring cell sectors. However, Kage discloses that a control channel (signaling time slot) is arranged next to idle slots (guard slots) to avoid interference with other data channels (traffic signaling of other cells), col.1 lines 40-60. Therefore, it would have been obvious to one having ordinary skill in the art to implement the feature of allocating predetermined time slots in the frame as guard periods to reduce likelihood of interference of signaling due to overlap of time slots between neighboring cell sectors to the system of Dent so that the communication system becomes more reliable due to the decreasing of the probability of co-channel interference events.

Regarding claim 22, Dent discloses a method for use in a mobile communications system having a plurality of cell segments, comprising:

communicating (measuring) control signaling carried in one or more of a plurality of time slots of a frame in a first cell segment and in a neighboring cell segment, col.11 lines 50-55; and

receiving control signaling in a first time slot adjacent a second time slot defined as part of a guard period to reduce likelihood of interference caused by overlap of time slots between the first cell segment and the neighboring cell segment.

Dent does not disclose allocating predetermined time slots in the frame as guard periods to reduce likelihood of interference of signaling due to overlap of time slots

between neighboring cell sectors. However, Kage discloses that a control channel (signaling time slot) is arranged next to idle slots (guard slots) to avoid interference with other data channels (traffic signaling of other cells), col.1 lines 40-60. Therefore, it would have been obvious to one having ordinary skill in the art to implement the feature of allocating predetermined time slots in the frame as guard periods to reduce likelihood of interference of signaling due to overlap of time slots between neighboring cell sectors to the system of Dent so that the communication system becomes more reliable due to the decreasing of the probability of co-channel interference events.

Regarding claim 23, Dent discloses a method, wherein the measuring includes measuring control signaling in time slots that are synchronized between the first and neighboring cell segments, col.10 lines 23-28.

Regarding claims 25, 27, Dent discloses an article including one or more machine-readable storage media containing instructions for controlling communications in a mobile communications system having a plurality of cell segments, the instructions when executed causing a controller to:

- define a frame having a plurality of time slots;

- synchronize time slots among the cell segments, col.10 lines 23-28.

Dent does not disclose allocating predetermined time slots in the frame as guard periods to reduce likelihood of interference of signaling due to overlap of time slots between neighboring cell sectors. However, Kage discloses that a control channel (signaling time slot) is arranged next to idle slots (guard slots) to avoid interference with other data channels (traffic signaling of other cells), col.1 lines 40-60. Therefore, it

would have been obvious to one having ordinary skill in the art to implement the feature of allocating predetermined time slots in the frame as guard periods to reduce likelihood of interference of signaling due to overlap of time slots between neighboring cell sectors to the system of Dent so that the communication system becomes more reliable due to the decreasing of the probability of co-channel interference events

Regarding claim 26, Dent discloses a method, wherein the one or more machine readable storage media includes instructions that when executed further cause a controller to:

communicate over a plurality of channels with the frame; and
provide a channel reuse pattern that is based on a plurality of channel frequencies and a plurality of time groups, wherein signaling is transmitted in different time slots in corresponding time groups. See figure 8a.

Regarding claim 28, Dent discloses a method, wherein communicating in the case of lack of speed activity for the whole time slot (idle periods in time slots comprises communicating idle periods in entire time slots). see col.10 lines 30-50.

Regarding claim 29, Dent discloses a method, wherein communicating the control and traffic signaling in the frame having the plurality of time slots comprises communicating the frame having the plurality of time slots in an duplex communication (including uplink path). See col.1 line 40.

Regarding claim 30, Dent discloses a method, wherein communicating the control and traffic signaling in the frame having the plurality of time slots comprises

communicating the frame having the plurality of time slots in duplex communication (including downlink path). See col.1 line 40.

Regarding claim 31, Dent discloses a method, wherein the controller is adapted to control communications of control and traffic signaling in the frame in duplex communication (including uplink path). See col.1 line 40.

Regarding claim 32, Dent discloses a method, wherein the controller is adapted to control communications of control and traffic signaling in the frame in duplex communication (including uplink path). See col.1 line 40.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-Uddenfeldt et al (US Patent No. 5,805,633) discloses method and apparatus for frequency planning in multi-system cellular communication network.

-Doner (US Patent No. 5,974,323) discloses frequency plan for wireless communication system that accommodates demand growth to high efficiency reuse factors.


-Mazur et al (US Patent No. 6,438,115 B1) discloses high speed data communication system and method.

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7. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Thien Tran whose telephone number is (703) 306-5445. The examiner can normally be reached on Monday-Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (703) 308-6602. Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Thien Tran



STEVEN H.D NGUYEN
PRIMARY EXAMINER